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Maine Agricultural Experiment Station

BULLETIN No. 102.

APRIL, 1904.

FEEDING STUFF INSPECTION.

This Bulletin contains the analyses of samples of Feeding Stuffs received from correspondents and collected by the inspectors in the fall and winter, 1903-4, and a discussion of the results of the inspection.

Requests for bulletins should be addressed to the

AGRICULTURAL EXPERIMENT STATION,
Orono, Maine.

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ORONO, MAINE.

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FEEDING STUFF INSPECTION.

CHAS. D. WOODS, Director.

J. M. BARTLETT, Chemist in charge of inspection analyses.

CHIEF REQUIREMENTS OF THE LAW.

The points of the law of most interest both to the dealer and consumer concisely stated, follow.

Kinds of Feed Exempt Under the Law. The law applies to all feeding stuffs *except* the following: hays and straws; whole seeds, meals, brans and middlings of wheat, rye, barley, oats, Indian corn, buckwheat and broom corn, sold separately; wheat bran and middlings mixed together and pure grains ground together.

Kinds of Feed Coming within the Law. The principal feeds coming under the provisions of the law are linseed meals, cotton-seed meals, cottonseed feeds, pea meals, cocoanut meals, gluten meals, gluten feeds, maize feeds, starch feeds, sugar feeds, dried brewer's grains, dried distiller's grains, malt sprouts, hominy feeds, cerealine feeds, rice meals, oat feeds, corn and oat chops, corn and oat feeds, corn bran, ground beef or fish scraps, condimental foods, poultry foods, stock foods, patented, proprietary and trade mark stock and poultry foods, mixed feeds other than those composed solely of wheat bran and middlings mixed together or pure grains ground together, and all other materials of similar nature.

The Brand. Each package of feeding stuffs coming within the law shall bear, conspicuously printed, the following statements:

The number of net pounds contained in the package.

The name or trade mark under which it is sold.

The name of the manufacturer or shipper.

The place of manufacture.

The place of business of manufacturer or shipper.

The percentage of crude protein.

The percentage of crude fat.

The Adulteration of Feeding Stuffs. If any foreign substances are added to whole or ground grain or wheat offals, the true mixture must be plainly marked upon the packages.

Duties of the Director. The Director shall in person or by deputy analyze at least one sample of each feeding stuff coming within the requirements of the law, and publish the results with such additional information as circumstances advise. He shall report all violations of the law to the Commissioner of Agriculture.

Penalties. The sale or offering for sale of feeding stuffs not properly branded, or containing a smaller percentage of protein and fat than are guaranteed, or of adulterated feeding stuffs, is punishable by a fine not exceeding 100 dollars for the first, and \$200 for each subsequent offense.

THE RESULTS OF THE INSPECTION FOR 1903-4.

The last bulletin on feeding stuff inspection was published in May, 1903. Since that time 668 samples have been analyzed by the Station chemists. About 175 of these samples were sent to the Station by correspondents. The others were collected by the inspectors and are from every county in the State. Most of the samples came from the parts of the State where concentrated feeds are most largely used. The samples received from correspondents are marked with * against the sample number in the table which follows. This table contains the results of the analyses of nearly all of the samples collected. In a few cases the samples received from correspondents are omitted, as nothing was known about them. For reasons explained in the discussion beyond the table, fat was usually determined in only one sample of each brand. The results of the analyses are given in the table which follows, and the results are discussed on page 51 beyond the table.

ANALYSES OF SAMPLES.

* Sample received from correspondent.

ANALYSES OF SAMPLES.

* Sample received from correspondent

ANALYSES OF SAMPLES.

Name of Feed and Manufacturer or Shipper.	PROTEIN.		FAT.		Station number.
	Found— per cent.	Guaranteed— per cent.	Found— per cent.	Guaranteed— per cent.	
Old Gold Brand Prime Cotton Seed Meal..... T. H. Bunch, Little Rock, Ark	45.00 44.38 44.13 45.38 43.50 41.75 43.00	43.00 43.00 43.00 43.00 43.00 43.00 43.00	— — 9.88 — — — —	9.00 9.00 9.00 9.00 9.00 9.00 9.00	9981* 9985* 10348 10428 10568 10571 10589
Owl Brand Prime Cotton Seed Meal F. W. Brodé & Co., Memphis, Tenn	41.19 43.38 43.00 39.50 41.00 44.94 40.13 41.69 46.25 38.75 42.69 44.88 43.81 41.69	43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.60 43.00 43.00 43.00 43.00 43.00 43.00	— 8.50 — — — — — — — — — — — —	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	10063* 10071 10158 10203 10233 10265 10294 10314 10375 10380 10427 10579 10592 10607
Phoenix Prime Cotton Seed Meal D. L. Marshall, Agent	46.06 43.19 43.50	43.00 43.00 43.00	10.13 — —	9.00 9.00 9.00	10126 10329 10526
Prime Cotton Seed Meal American Cotton Oil Co	43.75 41.50 43.13 47.94 40.06 47.75 46.38 41.31 42.13 42.38 44.75 43.25	43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00	— — 9.90 — — — — — — — — —	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	9975* 10087* 10130 10142 10151 10361 10397 10451 10453 10465 10484 10527
Prime Cotton Seed Meal H. E. Bridges & Co	47.25 45.88 45.88 45.25 45.38 44.50 43.13 44.50 49.12 49.37 44.13 45.00 43.88	43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00	7.60 — — — — — — — — — — — —	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	10226 10227 10229 10282 10391 10409 10430 10432 10485 10494 10498 10534 10535

* Sample received from correspondent.

ANALYSES OF SAMPLES.

Name of Feed and Manufacturer or Shipper.	PROTEIN.		FAT.		Station number.
	Found— per cent.	Guaranteed— per cent.	Found— per cent.	Guaranteed— per cent.	
Prime Cotton Seed Meal.....	44.44	43.00	-	9.00	10019*
Hunter Bros. Milling Company.....	44.75	43.00	-	9.00	10073*
	43.63	43.00	-	9.00	10083*
	38.69	43.00	-	9.00	10091*
	44.06	43.00	-	9.00	10092*
	39.88	43.00	8.05	9.00	10119
	41.44	43.00	-	9.00	10120
	44.00	43.00	-	9.00	10149
	39.88	43.00	-	9.00	10155
	42.63	43.00	-	9.00	10168
	47.25	43.00	-	9.00	10204
	44.00	43.00	-	9.00	10231
	44.00	43.00	10.03	9.00	10238
	46.75	43.00	-	9.00	10252
	45.44	43.00	-	9.00	10260
	45.25	43.00	-	9.00	10274
	42.81	43.00	-	9.00	10276
	41.50	43.00	-	9.00	10278
	45.69	43.00	-	9.00	10279
	42.00	43.00	-	9.00	10310
	39.50	43.00	-	9.00	10318
	46.13	43.00	-	9.00	10338
	46.63	43.00	-	9.00	10351
	43.25	43.00	-	9.00	10381
	45.13	43.00	-	9.00	10424
	47.00	43.00	-	9.00	10438
	47.50	43.00	-	9.00	10471
	43.75	43.00	-	9.00	10478
	33.75	43.00	-	9.00	10486
	43.12	43.00	-	9.00	10502
	43.75	43.00	-	9.00	10511
	43.00	43.00	-	9.00	10515
	41.25	43.00	-	9.00	10519
	41.38	43.00	-	9.00	10520
	41.75	43.00	-	9.00	10525
	45.63	43.00	-	9.00	10530
	46.38	43.00	-	9.00	10532
	44.75	43.00	-	9.00	10540
	42.06	43.00	-	9.00	10544
	41.00	43.00	-	9.00	10576
	41.13	43.00	-	9.00	10585
	41.06	43.00	-	9.00	10593
	43.00	43.00	-	9.00	10597
Prime Cotton Seed Meal..	41.13	43.00	13.40	9.00	10086*
Jacksonville Oil Mill Co ..					
Prime Cotton Seed Meal ..	45.69	43.00	8.35	9.00	10127
McKellar Bros.....	43.88	43.00	-	9.00	10247
Prime Cotton Seed Meal ..	42.87	41.00	9.08	-	10569
Planter's Cotton Oil Co.					
Prime Cotton Seed Meal ..	46.88	43.00	9.68	9.00	10215
Paris Flouring Co., Agents, Portland.....					
	44.75	43.00	9.43	9.00	10205
Prime Cotton Seed Meal ..	43.38	43.00	-	9.00	10277
J. E. Soper & Co., Boston Mass ..	46.00	43.00	-	9.00	10350
	44.00	43.00	-	9.00	10500

* Sample received from correspondent.

ANALYSES OF SAMPLES.

Name of Feed and Manufacturer or Shipper.	PROTEIN.		FAT.		Station number.
	Found-- per cent.	Guaranteed-- per cent.	Found-- per cent.	Guaranteed-- per cent.	
Prime Cotton Seed Meal	41.81	42.00	-	7.50	10056*
Southern Cotton Oil Co., Memphis, Tenn.	39.81	42.00	-	7.50	10059*
Soil Brand Cotton Seed Meal	40.63	41.00	10.05	7.50	10225
F. W. Brodé & Co., Memphis, Tenn	42.31	†	-	-	10040*
Southern Beauty Brand Prime Cotton Seed Meal	39.13	†	-	-	10075*
J. G. Falls and Co., Memphis, Tenn	43.50	43.00	8.75	9.00	10334
Star Brand Prime Cotton Seed Meal	44.94	43.00	-	9.00	9946*
Sledge & Wells, Memphis, Tenn.....	41.50	43.00	-	9.00	9955*
	44.44	43.00	-	9.00	9956*
	44.44	43.00	-	9.00	9959*
	35.94	43.00	-	9.00	9999*
	34.75	43.00	-	9.00	10000*
	43.00	43.00	-	9.00	10001*
	34.25	43.00	-	9.00	10003*
	39.88	43.00	-	9.00	10006*
	45.19	43.00	-	9.00	10007*
	39.00	43.00	-	9.00	10008*
	36.94	43.00	-	9.00	10009*
	35.44	43.00	-	9.00	10010*
	35.19	43.00	-	9.00	10011*
	36.00	43.00	-	9.00	10012*
	39.13	43.00	-	9.00	10013*
	45.38	43.00	-	9.00	10014*
	40.38	43.00	-	9.00	10015*
	43.50	43.00	-	9.00	10020*
	38.09	43.00	-	9.00	10021*
	36.63	43.00	-	9.00	10022*
	41.31	43.00	-	9.00	10024*
	44.38	43.00	-	9.00	10026*
	42.88	43.00	-	9.00	10030*
	41.50	43.00	-	9.00	10031*
	41.13	43.00	-	9.00	10035*
	42.75	43.00	-	9.00	10055*
	43.38	43.00	-	9.00	10068*
	45.19	43.00	-	9.00	10069*
	37.63	43.00	-	9.00	10076*
	37.69	43.00	-	9.00	10078*
	40.31	43.00	9.78	9.00	10123
	39.00	43.00	11.65	9.00	10167
	41.50	43.00	-	9.00	10172
	43.38	43.00	7.50	9.00	10221
	43.63	43.00	-	9.00	10236
	37.63	43.00	-	9.00	10237
	38.88	43.00	-	9.00	10249
	44.00	43.00	-	9.00	10258
	45.63	43.00	-	9.00	10271
	46.50	43.00	-	9.00	10313
	39.06	43.00	-	9.00	10316
	39.88	43.00	-	9.00	10319
	45.38	43.00	-	9.00	10341
	42.00	43.00	-	9.00	10343
	42.13	43.00	-	9.00	10347
	40.75	43.00	-	9.00	10353
	46.13	43.00	-	9.00	10364
	38.34	43.00	-	9.00	10450
	45.63	43.00	-	9.00	10458
	44.13	43.00	-	9.00	10481
	39.13	43.00	-	9.00	10497
	38.06	43.00	-	9.00	10513
	38.69	43.00	-	9.00	10518
	44.62	43.00	-	9.00	10541
	45.88	43.00	-	9.00	10548
	46.25	43.00	-	9.00	10606

* Sample received from correspondent.

† Nitrogen $\frac{7}{8}$ per cent.

ANALYSES OF SAMPLES.

Name of Feed and Manufacturer or Shipper.	PROTEIN.		FAT.		Station number.
	Found-- per cent.	Guaranteed-- per cent.	Found-- per cent.	Guaranteed-- per cent.	
Sunflower Brand Prime Cotton Seed Meal J. G. Falls & Co., Memphis, Tenn.	43.80	43.00	-	9.00	9966*
	42.00	43.00	-	9.00	10275
	44.63	43.00	9.58	9.00	10404
	44.25	43.00	-	9.00	10496
	44.50	43.00	-	9.00	10528
Blatchford's Sugar and Flaxseed Meal J. W. Barwell, Waukegan, Ill.	45.38	43.00	-	9.00	10563
	26.75	28.00	10.10	11.25	10323
	25.88	28.00	-	11.25	10324
	27.50	28.00	-	11.25	10542
	36.38	37.50	3.55	1.00	10108
Linseed Meal New Process. American Linseed Co	37.69	37.50	-	1.00	10148
	35.50	37.50	-	1.00	10194
	35.88	37.50	-	1.00	10208
	37.13	37.50	-	1.00	10222
	35.88	37.50	-	1.00	10239
	35.00	37.50	-	1.00	10246
	31.00	†37.50	7.88	1.00	10253
	35.88	37.50	-	1.00	10281
	36.00	38.00	-	1.00	10288
	31.50	†37.50	7.10	1.00	10295
	32.25	37.50	-	1.00	10335
	36.06	37.50	-	1.00	10431
	35.06	37.50	-	1.00	10449
	31.38	†37.50	-	1.00	10460
	32.88	†37.50	-	1.00	10463
Old Process Linseed Meal Midland Linseed Co	31.00	†37.50	-	1.00	10475
	37.13	37.50	-	1.00	10482
	32.00	†37.50	-	1.00	10510
	31.37	37.50	-	1.00	10524
	32.13	†37.50	-	1.00	10529
	32.25	†37.50	-	1.00	10538
	35.87	37.50	-	1.00	10546
	35.50	37.50	-	1.00	10584
	36.38	37.50	-	1.00	10605
	34.88	32.00	8.01	5.50	10101
Old Process Oil Meal.. Metzger Seed and Oil Co	28.81	31.50	-	5.50	10174
	27.63	31.00	-	5.50	10183
	34.56	32.00	-	5.50	10212
	29.25	32.00	7.78	5.00	10175
Old Process Oil Meal.. Metzger Seed and Oil Co	34.44	32.00	-	5.00	10273
	34.25	32.00	-	5.00	10298
	29.50	32.00	-	5.00	10308
	31.38	32.00	-	5.00	10352
	29.68	32.00	-	5.00	10472
Old Process Oil Meal .. American Linseed Co	29.38	32.00	-	5.00	10547
	33.88	32.00	-	5.00	10186
	32.63	32.00	7.25	5.00	10325
Old Process Linseed Oil Meal .. Flint Mill Co.	31.38	32.00	-	5.00	10386
	35.38	36.00	8.00	7.00	10440
Old Process Linseed Meal Simmons Milling Co., Red Wing, Minn.	34.88	†34.00*	7.05	†7.00	10094*
	33.94	†34.00	-	†7.00	10591

* Sample received from correspondent.

† These probably are old process meals and should have carried the guarantee of 32 per cent protein and 5 per cent fat.

‡ Guarantee made by Maine dealer from this analysis.

ANALYSES OF SAMPLES.

Name of Feed and Manufacturer or Shipper.	PROTEIN.		FAT.		Station number.
	Found-- per cent.	Guaranteed-- per cent.	Found-- per cent.	Guaranteed-- per cent.	
Cream Gluten Meal	34.25	34.12	.98	3.20	10266
Chas. Pope Glucose Co., Chicago, Ill	38.13	34.12	-	3.20	10299
King Gluten Meal	41.63	34.12	2.55	3.20	10399
National Starch Co., Chicago, Ill	32.25	35.50	2.13	3.70	10199
	34.88	35.50	-	3.70	10401
	24.75	28.00	2.93	3.00	10102
	23.75	28.00	-	3.00	10109
	23.13	28.00	-	3.00	10136
	21.06	28.00	-	3.00	10145
	24.00	28.00	-	3.00	10156
	21.50	28.00	-	3.00	10162
	24.00	28.00	-	3.00	10176
	25.13	28.00	-	3.00	10188
	23.94	28.00	-	3.00	10192
	22.44	28.00	-	3.00	10210
	23.63	28.00	-	3.00	10240
	23.63	28.00	-	3.00	10250
	24.38	28.00	-	3.00	10263
	21.63	28.00	-	3.00	10291
	22.13	28.00	-	3.00	10292
	23.63	28.00	-	3.00	10309
	23.75	28.00	-	3.00	10320
	21.06	28.00	-	3.00	10336
	24.25	28.00	-	3.00	10344
	24.38	28.00	-	3.00	10358
	22.81	28.00	-	3.00	10570
	26.00	28.00	-	3.00	10384
	23.25	28.00	-	3.00	10390
	25.44	28.00	-	3.00	10408
	25.13	28.00	-	3.00	10435
	24.75	28.00	-	3.00	10448
	23.00	28.00	-	3.00	10452
	24.12	28.00	-	3.00	10522
	24.13	28.00	-	3.00	10549
	23.88	28.00	-	3.00	10570
	22.25	28.00	-	3.00	10581
	25.25	28.00	-	3.00	10612
	26.81	28.00	3.48	3.00	10147
	26.69	28.00	-	3.00	10182
	23.75	28.00	-	3.00	10580
	22.00	28.50	3.25	3.00	10284
	22.00	28.50	-	3.00	10414
	22.88	28.50	-	3.00	10461
	36.69	34.00	-	12.00	10037*
	34.19	34.00	-	12.00	10412
	22.38	28.00	2.10	3.00	10124
	24.25	28.00	-	3.00	10235
	28.25	28.00	-	3.00	10300
	26.88	28.00	-	3.00	10326
	27.38	28.00	-	3.00	10330
	25.25	28.00	-	3.00	10339
	24.12	28.00	-	3.00	10360
	26.00	28.00	-	3.00	10374
	25.38	28.00	-	3.00	10417
	27.00	28.00	-	3.00	10447
	23.75	28.00	-	3.00	10477
	26.13	28.00	-	3.00	10483
	26.13	28.00	-	3.00	10493
	24.75	28.00	-	3.00	10553
	26.25	28.00	-	3.00	10556
	26.25	28.00	-	3.00	10611

* Sample received from correspondent.

ANALYSES OF SAMPLES.

* Sample received from correspondent.

ANALYSES OF SAMPLES.

Name of Feed and Manufacturer or Shipper.	PROTEIN.		FAT.		Station number.
	Found— per cent.	Guaranteed— per cent.	Found— per cent.	Guaranteed— per cent.	
Blatchford's Calf Meal.. J. W. Barwell, Waukegan..	26.44	26.00	5.25	5.00	10112
	26.00	26.00	-	5.00	10160
	23.56	26.00	-	5.00	10198
	24.88	26.00	-	5.00	10248
	24.38	26.00	-	5.00	10333
	24.63	26.00	-	5.00	10537
	24.75	26.00	-	5.00	10539
	23.87	26.00	-	5.00	10550
	21.94	21.81†	-	-	10042*
	16.63	21.81†	3.43	-	10043*
Molasses Feed. E. P. Mueller, Milwaukee	20.25	21.81†	-	-	10053*
	21.44	21.81†	-	-	10054*
	23.19	21.81†	3.48	-	10105
	18.75	21.81†	-	-	10305
	18.13	21.81†	-	-	10403
	17.19	21.81†	-	-	10476
	34.94	30.00	8.60	5.00	10111
	35.94	30.00	-	5.00	10133
Bowker's Animal Meal.. Bowker Co., Boston	35.00	30.00	-	5.00	10216
	35.50	30.00	-	5.00	10218
	33.88	30.00	-	5.00	10223
	33.50	30.00	-	5.00	10307
	33.75	30.00	-	5.00	10321
	32.75	30.00	-	5.00	10349
	34.25	30.00	-	5.00	10425
	35.12	30.00	-	5.00	10488
	43.37	30.00	-	5.00	10536
	34.25	30.00	-	5.00	10602
Bowker's Ground Beef Scrap Bowker Co., Boston, Mass	50.00	30.00	14.58	20.00	10131
	51.00	30.00	-	20.00	10426
	49.00	30.00	-	20.00	10442
	44.56	30.00	-	20.00	10459
	34.00	40.00	9.28	8.00	10202
Bradley's Superior Meat Meal... . . . American Agricultural Chemical Co	33.31	40.00	-	8.00	10261
	35.00	40.00	-	8.00	10286
	33.38	40.00	-	8.00	10406
	28.13	40.00	-	8.00	10454
	34.62	40.00	-	8.00	10551
	29.50	33.00	10.50	12.00	10422
Breck's Ground Beef Scrap J. Breck & Co., Boston	42.13	50.00	18.98	15.00	10423
	46.00	50.00	-	15.00	10456
	49.88	50.00	-	15.00	10554
Breck's Poultry and Swine Meal J. Breck & Co., Boston	31.00	32.00	10.60	10.00	10457
	43.00	39.10	31.05	35.70	10303
Brookside Farm Bone and Meat Scrap S. H. Nash, Bangor	40.50	39.10	29.55	35.70	10405
	70.19	50.00	10.35	9.00	10113
Ground Beef Scrap Kendall & Whitney, Portland	49.00	50.00	-	9.00	10207
	34.75	30.00	-	5.00	10367

* Sample received from correspondent.

† Protein and fat 21.81 per cent.

‡ Protein and fat 23.00 per cent.

ANALYSES OF SAMPLES.

Name of Feed and Manufacturer or Shipper.	PROTEIN.		FAT.		Station number.
	Found-- per cent.	Guaranteed-- per cent.	Found-- per cent.	Guaranteed-- per cent.	
Haskell's Ground Beef Scrap.	44.13	30.00	13.67	20.00	10365
George B. Haskell Co.					
Peerless Beef Scrap.	51.00	30.00	16.68	15.00	10280
Swift's Lowell Fertilizer Co., Boston, Mass.	45.88	30.00	-	15.00	10379
	50.75	30.00	-	15.00	10407
	41.69	30.00	-	15.00	10455
Swift's Lowell Bone and Meat Meal.	50.00	40.00	9.70	8.00	10133
Swift's Lowell Fertilizer Co., Boston, Mass.	33.94	40.00	-	8.00	10141
	46.63	40.00	-	8.00	10163
	35.38	40.00	-	8.00	10193
	35.69	40.00	-	8.00	10211
	30.38	40.00	-	8.00	10419
	34.50	40.00	-	8.00	10444
	37.50	40.00	-	8.00	10490
	34.69	40.00	-	8.00	10599
Swift's Lowell Ground Beef Scrap.	39.00	40.00	22.60	15.00	10443
Swift's Lowell Fertilizer Co., Boston, Mass.	44.88	40.00	-	15.00	10598
Akron Oat Feed.	9.75	9.20	2.60	4.14	10363
Akron Cereal Co., Akron, Ohio.					
American Poultry Food.	14.38	14.00	6.93	4.50	10217
American Cereal Co., Chicago, Ill.					
Apex Stock Food.	14.88	16.00	5.93	4.70	10492
Chapin & Co., Boston.					
Blue Grass Mixed Feed.	12.25	12.50	3.10	3.00	10376
A. Waller and Co.	9.50	12.50	-	3.00	10382
Boss Corn and Oat Feed.	8.63	9.00	5.05	4.00	10118
Great Western Cereal Co.	8.25	9.00	-	4.00	10296
	8.63	8.50	-	4.00	10337
	8.13	8.50	-	4.00	10345
Buckeye Wheat Feed.	15.50	17.75	4.10	4.70	10434
American Cereal Co.					
Canadian Oat Feed.	6.00	7.00	3.70	2.00	10566
C. M. Cox Co., Boston, Mass.					
Dairy Feed.	12.75	12.25	3.10	3.20	10268
Great Western Cereal Co.	8.25	12.25	-	3.20	10418
De-Fi Corn and Oat Feed.	9.44	8.00	3.10	3.00	10117
E. Ellsworth Co., Buffalo, N. Y.	11.63	8.00	-	3.00	10368
Excelsior Corn and Oat Feed.	8.63	8.00	4.68	4.00	10121
Great Western Cereal Co.	9.00	9.00	-	4.00	10189
	11.00	8.21	-	4.58	10371
	8.50	9.00	-	4.20	10470
	8.88	9.00	-	4.20	10503
Haskell's Oat Feed.	14.13	12.00	-	6.25	10005*
W. H. Haskell & Co.	8.63	10.00	5.53	6.25	10262
	8.63	10.00	-	6.25	10521

* Sample received from correspondent.

ANALYSES OF SAMPLES.

Name of Feed and Manufacturer or Shipper.	PROTEIN.		FAT.		Station number.
	Found-- per cent.	Guaranteed-- per cent.	Found-- per cent.	Guaranteed-- per cent.	
Haskell's Stock Food	8.38	10.00	5.58	2.50	10180
W. H. Haskell & Co	8.38	10.00	-	2.50	10195
	8.06	10.00	-	2.50	10214
	8.00	10.00	-	2.50	10332
	8.31	10.00	-	2.50	10613
Henkell's Oats and Corn Chop Feed.	8.81	10.81	6.03	6.02	10143
Commercial Milling Co	8.31	10.81	-	6.02	10505
	8.88	10.81	-	6.02	10508
Hominy Feed	10.00	10.50	8.48	7.50	10257
Chas. M. Cox & Co., Agents					
Hominy Feed	10.00	-	7.43	-	10565
Ilusted Milling Co.					
Hominy Feed	10.69	11.00	8.55	7.70	10191
Hunter Bros.					
II-O Poultry Food	17.06	17.00	5.81	5.50	10137
II-O Co., Buffalo, N. Y.	17.25	17.00	-	5.50	10355
Merritt's Jersey Cow Feed	29.13	28.00	6.65	6.00	10095*
E. Merritt & Sons, Houlton					
Mixed Feed	9.00	10.30	4.03	6.00	10290
Great Western Cereal Co.					
Oat Feed	5.88	-	2.92	-	10132
C. M. Cox Co., Agents.					
Puritan Chick Food	12.63	-	7.52	-	9980*
Quaker Dairy Feed	9.00	12.00	-	2.00	10004*
American Cereal Co., Chicago, Ill	13.38	14.00	4.25	3.50	10201
	13.38	14.00	-	3.50	10356
	13.25	14.00	-	3.50	10575
Quaker Oat Feed	12.56	14.00	3.57	3.50	10171
American Cereal Co., Chicago, Ill	11.38	14.00	-	3.50	10267
	14.00	14.00	-	3.50	10393
Royal Oat Feed	5.63	6.00	2.50	2.00	10116
Great Western Cereal Co.	5.44	7.50	-	2.60	10150
	2.88	7.50	-	2.65	10196
	5.94	7.50	-	2.65	10392
	8.81	9.00	4.03	4.00	10125
	7.94	9.00	-	4.00	10146
	8.50	9.00	-	4.00	10170
	8.00	9.00	-	4.00	10181
	8.75	9.00	-	4.00	10200
	8.88	9.00	-	4.00	10243
	8.63	9.00	-	4.00	10302
	8.63	9.00	-	4.00	10328
	8.50	9.00	-	4.00	10342
	8.75	9.00	-	4.00	10433
	8.38	9.00	-	4.00	10445
	8.00	9.00	-	4.00	10559
	8.75	9.00	-	4.00	10572

* Sample received from correspondent.

ANALYSES OF SAMPLES.

Name of Feed and Manufacturer or Shipper.	PROTEIN.		FAT.		Station number.
	Found-- per cent.	Guaranteed-- per cent.	Found-- per cent.	Guaranteed-- per cent.	
Vim Oat Feed..... American Cereal Co., Chicago, Ill.....	6.94	7.50	3.20	2.75	10269
	5.75	7.50	-	2.75	10377
	7.06	7.00	-	2.75	10446
Yankee Corn and Oat Feed .. Great Western Cereal Co., Chicago, Ill...	7.88	7.58	2.35	2.00	10331
	13.00	-	3.85	-	10322
Clover Meal Cypher's Incubator Co., Boston, Mass....	13.00	-	3.85	-	10322
	12.81	13.25	3.90	2.07	10128
Gee's Extra Fancy Sharps .. G. E. Gee Company, Minneapolis, Minn...	13.00	13.25	2.20	2.07	10362
	12.81	13.25	2.20	2.07	10362
Gee's Oil Cake Compound .. G. E. Gee Co., Minneapolis, Minn....	13.75	15.25	6.18	8.50	10122
	17.31	-	-	-	10045*
Bran .. Ansted and Bush Co ..	14.30	-	-	-	9986*
Bran .. Geo. Tillston Milling Co., St. Cloud, Minn.	15.56	-	-	-	10469
Pillsbury's Bran.	15.00	-	-	-	10046*
Saginaw Bran.	13.44	-	-	-	10044*
Winter Wheat Bran. Dorr & King, Pittsford, Illinois ..	13.12	-	-	-	9965*
	15.81	-	-	-	10016*
Blish Mixed Feed.. Blish & Company ..	15.81	-	-	-	10387
	16.50	-	-	-	9960*
Daisy Mixed Feed .. Daisy Roller Mills ..	15.38	-	-	-	9961*
	15.19	-	-	-	10389
Mixed Feed .. North Western Elevator Mill Co., Toledo, O	17.88	-	-	-	10018*
Pillsbury's Daisy Flour ..	20.69	-	6.58	-	9956*
Red Dog Flour. Pillsbury--Washburn Co ..	16.87	-	3.50	-	9969*

* Sample received from correspondent.

DISCUSSION OF THE RESULTS OF ANALYSES.

With the small appropriation made by this State for the inspection of concentrated commercial feeding stuffs, it is not practicable to collect samples of the feeding stuffs on sale in Maine as frequently as a thorough inspection demands; nor is it possible to make as complete analyses of the samples collected as is desirable. The tables show, however, that a large number of samples have been received. The most valuable constituent of a feeding stuff, from the standpoint of the purchaser, is protein. Fortunately this can be determined at less cost than any other ingredient. For these reasons protein has been determined in every sample collected. Fat is fairly uniform in high grade goods of the same class and on this account its determination is of less importance. It was, therefore, for the most part determined in only one sample of each brand. The determination of woody fiber in many kinds of goods is very important and it is to be regretted that the funds available for this work are too small to admit of its estimation in any of the samples. In case of certain possible adulterations the ash should be determined. This has, however, for the same reason, been impracticable.

COTTONSEED MEAL (ANALYSES PAGES 39-44).

Cottonseed meal is a by-product from the manufacture of cottonseed oil. After the cotton has been taken from the seed in the cotton gin, the remaining down or "linters," and the hard black seed coats or hulls are removed by machinery. What remains of the seed is cooked, and the oil expressed by high pressure. The resulting cottonseed cake is ground into the bright yellow cottonseed meal of commerce. Such a meal carries from 40 to 50 per cent protein.

*The shippers of cottonseed meal for the most part guarantee 43 per cent protein and 9 per cent fat. According to the classification of the Cotton Seed Crushers Association, "prime" cottonseed meal from the Gulf States must carry not less than 8 per cent, and that from the South Atlantic States not less than $7\frac{1}{2}$ per cent ammonia. As 8 per cent ammonia is equivalent to only 41.19 per cent protein, it is evident that the minimum guarantee is placed higher by the shippers than the Association calls for in prime meal. Hence a meal that carries 41 per cent protein is

"prime" in the trade sense, but is below the guarantee usually placed upon cottonseed meal sold in Maine.

The hulls and cotton which should be removed from the seed before it is crushed and pressed have but little feeding value. A little of these materials is always present in the meal. The temptation to include as much of them as practicable is great. Occasionally it happens that considerable of the black hulls are ground with the cake and a dark colored meal of inferior feeding value is the result. From information that seems reliable it appears that recently considerable money has been invested in machinery designed to grind the hulls very fine and thus disguise them more completely. This may account for much of the cottonseed meal offered this year in Maine running lower than it has in past years in protein and fat.

Strictly first class fresh cottonseed meal is always bright and yellow and should have a pleasant nutty flavor. Not all dark colored cottonseed meal is necessarily adulterated. Spontaneous heating of the seed in the field, or overcooking of the "meat," may render the meal dark in color without changing its composition. Such meal is not first quality, however, and is usually sold at a lower price. Cottonseed sometimes carries practically no cotton and the hulls break up and pass into the meal. This is, of course, an adulteration with hulls, although an unintentional one.

The hulls are lighter than ground cottonseed cake, and their presence in meal, particularly if they are not finely ground, can be readily detected by stirring up a little of the meal in a tumbler with hot water. The hulls will settle out more slowly and will appear on the top of the meal in the bottom of the tumbler. Testing a high grade meal in comparison with a poor meal will easily familiarize any one with this simple, yet quite reliable test.

Samples have been received of 24 different named brands and quite a number of samples have been forwarded by dealers that were unbranded. These were usually samples that were submitted to them for purchase and in many instances the reported low analyses have resulted in the Maine dealers not buying the goods. This is one way in which the law has greatly helped the dealer and still more, the consumer.*

* This is illustrated by a sample of cottonseed meal offered to the Paris Flouring Company. On analysis it was found to carry only 24.62 per cent protein, and the goods were not purchased.

The samples sent in by correspondents have as a rule run lower in protein than those collected by the inspectors. This is to be expected, for usually the consumer only sends a sample because he suspects it to be of inferior quality. This prompt free analysis of samples from correspondents makes it possible for a feeder to know just what he is using.

From December to June it is fairly easy for the dealers to obtain cottonseed meal of good quality, and on this account those consumers who are so situated that they can do so, will find it avantageous to purchase in the winter all the cottonseed meal they will need until new meal from another crop will be on the market. Even if the price should drop somewhat, this would usually be more than offset by the superior quality of the meal obtained at the time of the early purchase.

With an occasional exception, most of the cottonseed meal analyzed at the Station has come up to the guarantee, or nearly so. The number of samples that have run much above the guarantee have been less than in former years. To the uniform good quality of most of the meal, that sold under the name of "Star brand prime cottonseed meal" has been an exception. Because of the poor appearance of these goods a very large number of samples were sent to the Station by dealers and consumers. Out of 57 samples examined, 31 were received from correspondents. A large number were from the house which imported the goods and were taken from car load lots before they were distributed. The importers state that these good were then sold on their merits as indicated by the Station analyses, and that they were guaranteed for their actual protein content.

Not only was much of Star brand cottonseed meal low in analysis, but it was of poor appearance. Even when it carried the full amount of protein it was usually of poor color and taste. It would seem that the shippers of this brand did not intend to handle good meal. It is said that they have reformed in this particular, and that Star brand goods after this will be of good quality. It is to be hoped that this is the case, but for the present, users of this brand of cottonseed meal should be watchful as to its quality.

Sea Island cottonseed meal, which a few years ago was common in the State, was not found at all this year in the hands of

the dealers. That it still is in other markets and is only kept out because of the feed law, is illustrated by a sample (No. 9977 with 24.75 per cent of protein) that was offered a Maine dealer and by him sent to the Station for analysis.

Cottonseed feed meal has been found in other states, but none has yet come to Maine. A sample was sent to the Oscar Holway Company of Auburn, which they sent to the Station. It analyzed as follows:

Sample No. 10,077, 5.88 per cent water; 4.38 per cent ash; 23.88 per cent protein; 21.57 per cent fiber; 6.82 per cent fat.

When it is remembered that good cottonseed meal carries about 7 per cent of crude fiber, the bad quality of this feed meal is even more apparent than its low protein content indicates.

LINSEED MEAL (ANALYSES PAGE 44).

Linseed meal is made by grinding flax seed from which the oil has been more or less completely removed. "Old process" meal is made from oil cake from which as much as possible of the oil has been removed by pressure. In the "new process" the oil is extracted by the use of naphtha. Old process meal carries more fat and less protein than new process. Because of the method of manufacture, new process meal is somewhat more uniform in composition. Cleveland flax meal is a trade name for a new process linseed meal. Oil meal is quite a common trade name for old process linseed meal.

Most of the oil meal was up to its guarantee in protein. No evidence of any adulteration of this class of feeds was found. Quite a number of samples of American Linseed Oil Company's meal were taken from lots that were apparently wrongly tagged. They should have been labelled old process and guaranteed 32, instead of 37.5 per cent protein. Fat was determined in two of these samples low in protein and they were found to carry much more fat than new process meal would. The samples referred to in the foot note on page 44 were doubtless all from old process meal. Because of the relatively lower price, more linseed meal has been used than for many years.

GLUTEN MEALS AND FEEDS (ANALYSES PAGE 45).

Gluten meals and gluten feeds are by-products left in the manufacture of starch and glucose from Indian corn. Corn consists

largely of starch. The waste product in the manufacture of starch or sugar is relatively much richer in oil and protein than is corn.

Most factories remove part of the corn oil from the waste, so that nearly all the gluten meals carry less oil than they did a few years ago. Gluten feeds differ from gluten meals in that they contain a good deal of the corn bran, and hence relatively less of protein, fat and digestible carbohydrates, and more of the indigestible woody fiber.

Gluten meal, which a few years ago was so largely used, is now practically out of the market. Chicago gluten was temporarily taken out of the market by the burning of the building where it was manufactured. The building has been rebuilt, but it is not certain that the meal will be again put upon the market. Two samples of King gluten meal were found, but it is understood that this brand has been permanently taken out of the market. The samples of this brand agree fairly well with the guaranteed analyses. Three samples of Cream gluten meal varied greatly in composition. The protein content was greater in each case than the guarantee.

The gluten feeds run considerably under the guaranteed percentage of protein. The Flint gluten feed is guaranteed 28.50 per cent, the gluten feeds of the Glucose Sugar Refining Company, the Illinois Sugar Refining Company and the Warner Sugar Refining Company are all guaranteed 28 per cent protein, and the National Starch Company guarantees its gluten feed to carry 27.10 per cent protein. The gluten feed highest in protein carried only 27.38 per cent, and the lowest carried 18.75 per cent protein. A guarantee based upon the samples examined and here reported should not be higher than the following for the brands as named: Buffalo 24 per cent, Crescent 26, Flint 22, Pekin 25, Warners 18, and Queen 24 per cent protein.

The seasons of 1902 and 1903 were unfavorable to corn, and it may be that another season's goods may contain nearer 28 per cent protein. In compounding rations it will, however, probably be safer to discount this guarantee somewhat.

DISTILLERS' GRAINS (ANALYSES PAGE 46).

Dried distillers' grains resemble in composition the gluten feeds. They are, however, much more bulky. They are derived chiefly from corn from which the starch is removed by fermentation. A feeding experiment conducted at this Station* showed these grains to be a valuable source of protein. Two brands, Ajax flakes and Biles Fourex, are on the Maine market. Commission houses have sent a few samples of presumably other kinds, but the analyses have been practically the same as the two named. Neither of the brands run up to the guarantee in protein. On the average Biles Fourex carries not much better than 30 per cent and Ajax flakes about 32 per cent protein. The goods are somewhat difficult to sample accurately and it may be that the extremely low analyses do not fairly represent the goods. The poor quality of the corn of the season of 1903, poorer even than that of 1902, probably explains this falling off, as in the case of the gluten feeds. However that may be, the manufacturers of these various corn wastes should be on the lookout for such changes and make their guarantees accordingly.

UNION GRAINS. (ANALYSES PAGE 46).

Union grains are a ready made mixture carrying the protein and fat according to the guarantee. They are based upon a feeding experiment with Holstein cattle in which Biles Fourex was fed in combination with wheat bran, gluten feed, ground corn, ground oats, and oil meal. For the farmer who must buy all his feeds, Union grains at a fair price would probably prove profitable. As a rule, oats and corn are profitable for cows when the feeds are home grown and expensive feeds to purchase. A feeding test is being made at this Station with Union grains.

BLATCHFORD'S CALF MEAL (ANALYSES PAGE 47).

Blatchfords' calf meal has been upon the market for several years. It is apparently pretty widely distributed in the State. The first sample examined by the Station in 1898 carried 33.44 per cent protein. This sample was probably much higher in protein than the goods usually run. The year following the samples ran about as this year, with 25 per cent protein. The

* Buletin 92, page 65.

guarantee for protein is one per cent higher. In this year's samples the protein ran from 23.56 to 26.44 per cent.

MOLASSES GRAINS (ANALYSES PAGE 47).

Brewers' grains are not sold in the State, but recently a Milwaukee firm has been putting upon the market a mixture of dried brewers' grains and molasses, under the name of Molasses grains, or Molasses feed. The goods are rather sticky and do not run uniform, so far as the 8 samples analyzed show. The guarantee is not in accord with the law of this State, but covers the sum of protein and fat. Deducting the fat found, the guarantee for protein is about 18 per cent and the goods with two exceptions carried more protein. The protein ran from 16.63 to 23.19 per cent. It seems doubtful if this can be sold at a price that will be economical for a horse or a cow feed at this distance from its place of manufacture.

MEAT MEALS AND GROUND SCRAPS (ANALYSES PAGE 47).

The meat meals and ground beef scraps are used chiefly for feeding poultry, and while they are very generally distributed, it is probable that the sales are not large as compared with other materials coming under the feeding stuffs law. The guarantees placed upon the goods are only a very general guide to the actual composition. It will be noted that while all the brands are quite irregular in composition, that some uniformly run much higher in protein than others. Some of the companies have made at least two guesses in different years as to what their goods are and evidently some still need revision. Bradley's superior meat meal is guaranteed 40 per cent and carries from 28 to 35 per cent protein. Kendall & Whitney's ground beef scrap, guaranteed at 50 per cent, carried in one instance 49 per cent and in another 70 per cent. Swift's Lowell bone and meat meal ranged from 30 to 50 per cent protein. As these feeds are used only in small amounts in a ration, the fluctuations do not greatly affect the daily food of the fowl.

REFUSES FROM MILLING OATS, CORN, ETC. (ANALYSES PAGE 48).

The use of the various oat feeds, corn chops, corn and oat feeds and similar offals by themselves, or blended with concentrated feeds, still continues. They vary in composition from the

straight oat hull refuse, with less than 6 per cent protein, to blends that carry from 15 to 18 per cent protein. For the most part these goods are fairly well up to their guarantees. No fault can be found with the manufacturer for desiring to sell these waste products. They make few claims for nutrients which the goods do not actually carry. The feeder has himself to blame if, with barns filled with hay, corn fodder and silage, he buys this class of feeds low in protein, instead of those high in protein. An oat feed with 6 per cent protein is no better feed nor is it any better digested than oat straw with the same protein content. It is finely ground and saves some work of mastication for the animal that eats it.

Clover meal is sold for poultry. In composition it corresponds fairly well with ordinary clover.

Gee's extra fancy sharps and Gee's oil cake meal are made from wheat refuses and the weed seeds removed in cleaning wheat before milling. They are not sold at such prices as to invite their use in preference to the materials they more or less resemble in protein content.

WHEAT BRAN AND MIDDLINGSMIXED FEED (ANALYSES
PAGE 50).

The results of analyses of samples of wheat offals sent to the Station by correspondents and collected by the inspectors are given in the table.

In the fall of 1899 the State was flooded with low grade, adulterated wheat brans and mixed feeds. Because of the publicity given to these fraudulent goods and the co-operation of the best of the large dealers, they have quite largely disappeared, or are sold under a proper guarantee.

There is so much profit in selling ground corn cobs, broom corn and other valueless materials at the price of wheat bran that the consumer must ever be on the watch against this fraud. The safest thing is to buy only well known reliable brands of this class of goods. If consumers will see to it that all of this class of feeds which they buy carries the name of the miller, there will be little likelihood of their being defrauded. In case of any doubt, any resident of Maine is invited to mail a sample to the Station. An analysis will be made and the results reported promptly and without charge.

THE KIND OF CONCENTRATED FEEDING STUFFS TO PURCHASE.

The crops grown upon the farm are rich in carbohydrates and poor in protein. Clover will help supply the needed protein, and home grown grains will help out toward a balanced ration. But after growing all the food that can be produced economically on the farm, the dairyman will usually find that he needs to supplement the home grown food by the purchase of concentrated commercial feeding stuffs.

As the farm produces or can be made to produce all the starch, sugar and fiber that are needed, it is not necessary to take these constituents into account in the purchase of supplementary food materials. While they have a part, and a necessary part, in the ration, it is protein that is needed to supplement the home grown foods, hence the cost per pound of the protein in a given feeding stuff is of more importance than the ton price. A ton of cottonseed meal costs more than a ton of oat feed, but the protein in the former costs less than four cents a pound and ten or more in the other. The following table shows the number of pounds of protein that a ton of a few average feeding stuffs carries, and the cost of a pound of protein at the usual range in selling price.

COST OF ONE POUND PROTEIN IN DIFFERENT FEEDING STUFFS AT DIFFERENT PRICES PER TON.

Kind of feeding stuff.	Pounds.	Protein in ton.	At \$18 per ton.	At \$20 per ton.	At \$24 per ton.	At \$26 per ton.	At \$28 per ton.	At \$30 per ton.
Cottonseed meal.....	840	.....	.....	.....	3.0	3.3	3.6	
New process linseed meal..	750	.....	.....	.....	3.4	3.7	4.0	
Old process linseed meal...	640	.....	.....	.....	4.1	4.4	4.7	
Gluten meal.....	680	.....	.....	.....	3.8	4.1	4.4	
Gluten feed .. .	520	.....	.....	4.6	5.0	5.4	.....
Distillers grains	660	.....	.....	.....	3.9	4.2	4.5	
Union grains	480	.....	.....	.....	5.4	5.8	6.2	
Wheat middlings	360	5.0	5.4	.....	.....	.....	.....
Wheat bran	300	6.0	5.7	.....	.....	.....	.....
Oat feed as Vim or Royal ..	150	12.0*	.....	.....	.....	.....	.....

* At \$12 per ton, a pound of protein will cost 8 cents.

WEIGHT OF DIFFERENT CONCENTRATED FEEDS.

It is the common practice in Maine to feed by measure rather than by weight, and since different feeding stuffs vary greatly in weight, it is obviously unfair to compare the feeding values of different feeding stuffs measure for measure. For instance, a quart of cottonseed meal weighs one and one-half pounds, and a quart of dried distillers' grains weighs less than half as much. To assist feeders who have no conveniences for weighing, the following table, prepared by Mr. H. G. Manchester, West Winsted, Conn., is reprinted from Bulletin 145 of the Connecticut Agricultural Experiment Station.

THE AVERAGE WEIGHT OF ONE QUART OF EACH OF THE FEEDS NAMED.

	Pounds.
Cottonseed Meal.....	1.5
Linseed Meal, old process.....	1.1
Linseed Meal, new process.....	0.9
Gluten Meal.....	1.7
Gluten Feed.....	1.2
Distillers' Grains.....	0.7
Wheat Bran, coarse.....	0.5
Wheat Middlings, coarse.....	0.8
Wheat Middlings, fine.....	1.1
Mixed Wheat Feed.....	0.6
Corn Meal.....	1.5
Hominy Meal.....	1.3
Oats	1.2
H. O. Dairy Feed.....	0.7
Victor Corn and Oat Feed.....	0.7

FREE ANALYSIS OF FEEDING STUFFS.

The Station officers take pains to obtain for analysis samples of all feeding stuffs coming under the law, but the co-operation of consumers is essential for the full and timely protection of their interests. Whenever anyone believes that this law is being evaded in any way, he is requested to notify the Director of the Station.

The Station will promptly analyze samples of feeding stuffs sold in Maine taken in accordance with the following directions and report the results without any charge to the interested parties. Dealers and consumers are urged to avail themselves of this offer.

DIRECTIONS FOR SAMPLING.

The sample should fairly represent the feeding stuff and is best obtained as follows:

Open one or more full and unbroken packages, and mix well together the contents of each for a foot in depth, take out three cupfuls from different parts of the mixed portions of each package, pour them one over another upon a paper, intermix thoroughly and fill a tin spice or baking powder box from the mixture. Upon paper plainly write (1) the name of the goods; (2) the name of the manufacturer; (3) the guaranteed percentages of protein and fat; (4) the name and address of the dealer; and (5) the name and address of the sender. Securely wrap the box and description of sample in paper and send by mail to the

Agricultural Experiment Station,
Orono, Maine.